



ecology and environment, inc.

International Specialists in the Environment

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MEMORANDUM

DATE: March 21, 1995

TO: Jeryl Kolb, Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, TAT-Chemist, E & E, Seattle, WA MN

THRU: David Byers, TAT-Chemist, E & E, Seattle, WA DB

SUBJ: Organic Data Quality Assurance Review, Ridgefield Site,
Ridgefield, Washington

REF: Project TDD: T10-9410-028 Analytical TDD: T10-9412-004
Project PAN: EWA-0797-SB Analytical PAN: EWA-0797-AA

The data quality assurance review of 5 water and 2 soil samples collected from the Ridgefield site located in Ridgefield, Washington, has been completed. Analysis for Semivolatile Organic Compounds (EPA Method 8270) was performed by Sound Analytical Services, Tacoma, Washington.

The samples were numbered:

| | | | | | |
|-------|----------|----------|----------|----------|----------|
| Water | T4120210 | T4120211 | T4120212 | T4120221 | T4120219 |
| Soil | T4120201 | T4120207 | | | |

Data Qualifications:

I Holding Time: Satisfactory.

The samples were collected 12-12-94 or 12-13-94, extracted 12-20-94 or 12-28-94, and were analyzed by 1-12-95. All samples met QC criteria of less than 7 days (14 days for soils) between collection and extraction and less than 40 days between extraction and semivolatile analysis, except the soil samples, which were flagged as estimated quantities (J or UJ).

II GC/MS Tuning: Acceptable.

All tuning check compound mass abundances and ratios were within QC limits for semivolatile analysis.

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III Calibration

A. Initial Calibration: Satisfactory.

All System Performance Check Compounds (SPCCs) were within contract-required limits for the initial calibration with average Relative Response Factors (RRFs) above 0.05 for semivolatiles, except:

| Date | Analyte | RRF |
|----------|----------------------------|-------|
| 7-1-94 | 4,6-Dinitro-2-methylphenol | 0.047 |
| 12-21-94 | 4,6-Dinitro-2-methylphenol | 0.036 |

4,6-Dinitro-2-methylphenol sample quantitation limits were rejected (R).

All applicable Calibration Check Compounds (CCCs) and non-CCCs were within contract-required limits for the initial calibration with Percent Relative Standard Deviations (RSDs) below 30 percent, except:

| Date | Analyte | RSD |
|----------|----------------------------|--------|
| 12-21-94 | Benzoic Acid | 42.1 % |
| | 2,4-Dinitrophenol | 54.4 % |
| | 4,6-Dinitro-2-methylphenol | 47.5 % |
| | Phenol | 27.6 % |
| | Pentachlorophenol | 28.5 % |
| | Benzidine | 41.4 % |
| 7-1-94 | Phenol | 27.0 % |
| | Benzoic Acid | 56.4 % |
| | 2,4-Dinitrophenol | 65.2 % |
| | 4,6-Dinitro-2-methylphenol | 48.9 % |
| | 4-Bromophenyl-phenylether | 27.9 % |
| | Pentachlorophenol | 42.9 % |
| | 3,3'-Dichlorobenzidine | 48.9 % |
| | Benzidine | 41.4 % |

Positive results for the initial calibration QC outliers were flagged as estimated quantities (J) in the associated samples.

B. Continuing Calibration: Satisfactory.

All System Performance Check Compounds (SPCCs) were within contract-required limits for the continuing calibration with average Relative Response Factors (RRFs) above 0.05 for semivolatiles, except:

| Date | Analyte | RRF |
|----------|----------------------------|-------|
| 12-28-94 | 4,6-Dinitro-2-methylphenol | 0.037 |
| 12-22-94 | 4,6-Dinitro-2-methylphenol | 0.045 |

Positive results for the continuing calibration QC outliers were flagged as estimated quantities (J) in the associated samples.

All Calibration Check Compounds (CCCs) and non-CCCs were within contract-required limits for the continuing calibration with Percent Differences (%D) below 25 percent, except:

| Date | Analyte | RSD |
|----------|----------------------------|--------|
| 12-22-94 | bis(2-Chloroethoxy)methane | 33.4 % |
| | 2,4-Dinitrophenol | 27.4 % |
| | 4,6-Dinitro-2-methylphenol | 25.1 % |
| | 4-Nitrophenol | 28.6 % |
| 12-28-94 | 2,4-Dinitrophenol | 30.6 % |
| | Benzidine | 38.8 % |

Results for the continuing calibration QC outliers were flagged as estimated quantities (J or UJ) in the associated samples.

IV Internal Standards: Acceptable.

All Internal Standard results were within QC limits.

V Error Determination: Not Performed.

A. Determination of Bias: Not Performed.

Samples necessary for bias determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined).

B. Determination of Precision: Not Performed.

Samples necessary for precision determination were not provided to the laboratory. All samples were flagged PND (Precision Not Determined).

VI Method Blank: Satisfactory.

No Target Compound List contaminants were detected in any method blank, except:

| Blank | Analyte | Concentration |
|--------------|----------------------------|---------------|
| Method Blank | Di-n-butylphthalate | 3.6 ug/L |
| | bis(2-ethylhexyl)phthalate | 0.9 ug/L |

Sample results less than 10 times the phthalate blank results were flagged as not detected (U).

VII Compound Identification: Acceptable.

Compound identification was acceptable.

VIII Compound Quantitation and Reported Detection Limits: Acceptable.

Compound quantitation and reported detection limits were acceptable.

IX Performance Evaluation Samples: Not Performed.

Performance evaluation samples were not provided to the laboratory.

X Surrogate Recovery: Acceptable.

Recoveries for all surrogate compounds were within QC limits.

XI Overall Assessment of Data for Use

Results greater than the instrument detection limit but less than the practical quantitation limit were flagged as estimated quantities (J).

The overall usefulness of the data is based on the criteria outlined in the OSWER Directive "Quality Assurance/Quality Control Guidance for Removal Activities, Data Validation Procedures" (EPA /540/G-90/004). Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the contract required detection limits or quality control criteria were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

R - Quality control indicates that the data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120210 |
| Lab ID: | 45227-01 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/20/94 |
| Date Analyzed: | 12/22/94 |
| % Solids | - |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | 59 | | 35 | 114 |
| 2 - Fluorobiphenyl | 57 | | 43 | 116 |
| p - Terphenyl - d14 | 72 | | 33 | 141 |
| Phenol - d5 | 25 | | 10 | 94 |
| 2 - Fluorophenol | 47 | | 21 | 100 |
| 2,4,6 - Tribromophenol | 63 | | 10 | 123 |

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| Phenol | ND | 0.28 | ND |
| bis(2-Chloroethyl)ether | ND | 0.37 | ND |
| 2-Chlorophenol | ND | 0.4 | |
| 1,3-Dichlorobenzene | ND | 0.53 | |
| 1,4-Dichlorobenzene | ND | 0.51 | |
| Benzyl Alcohol | ND | 1.4 | |
| 1,2-Dichlorobenzene | ND | 0.55 | |
| 2-Methylphenol | ND | 0.52 | |
| bis(2-Chloroisopropyl)ether | ND | 0.9 | |
| 4-Methylphenol | ND | 1.4 | |
| N-nitroso-di-n-propylamine | ND | 0.98 | |
| Hexachloroethane | ND | 0.98 | |
| Nitrobenzene | ND | 1.5 | |
| Isophorone | ND | 1.2 | |
| 2-Nitrophenol | ND | 0.52 | |
| 2,4-Dimethylphenol | ND | 0.4 | |
| Benzoic Acid | ND | 0.63 | |
| bis(2-Chloroethoxy)methane | ND | 0.53 | 5 |
| 2,4-Dichlorophenol | ND | 0.38 | |
| 1,2,4-Trichlorobenzene | ND | 0.5 | |
| Naphthalene | 0.82 | 0.38 | |
| 4-Chloroaniline | ND | 0.45 | |
| Hexachlorobutadiene | ND | 0.4 | |
| 4-Chloro-3-methylphenol | ND | 0.37 | |
| 2-Methylnaphthalene | ND | 0.4 | |
| Hexachlorocyclopentadiene | ND | 0.65 | |

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Semivolatile Organics by USEPA Method 8270 data for 45227-01 continued...

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| 2,4,6-Trichlorophenol | ND | 0.41 | PNO |
| 2,4,5-Trichlorophenol | ND | 0.44 | RND |
| 2-Chloronaphthalene | ND | 0.62 | |
| 2-Nitroaniline | ND | 0.61 | |
| Dimethylphthalate | ND | 0.58 | |
| Acenaphthylene | ND | 0.38 | |
| 2,6-Dinitrotoluene | ND | 0.37 | |
| 3-Nitroaniline | ND | 0.32 | |
| Acenaphthene | ND | 0.53 | |
| 2,4-Dinitrophenol | ND | 0.39 | |
| 4-Nitrophenol | ND | 0.13 | |
| Dibenzofuran | ND | 0.51 | |
| 2,4-Dinitrotoluene | ND | 0.65 | |
| Diethylphthalate | ND | 0.52 | |
| 4-Chlorophenyl phenyl ether | ND | 0.46 | |
| Fluorene | ND | 0.76 | |
| 4-Nitroaniline | ND | 0.47 | |
| 4,6-Dinitro-2-methylphenol | ND | 0.31 | R |
| N-Nitrosodiphenylamine | ND | 0.57 | |
| 4-Bromophenyl phenyl ether | ND | 0.31 | |
| Hexachlorobenzene | ND | 0.37 | |
| Pentachlorophenol | ND | 0.5 | |
| Phenanthrene | ND | 0.59 | |
| Anthracene | ND | 0.49 | |
| Di-n-butylphthalate | 2.4 | 1.2 | B1 |
| Fluoranthene | ND | 0.37 | |
| Pyrene | ND | 0.42 | |
| Butylbenzylphthalate | ND | 0.42 | |
| 3,3'-Dichlorobenzidine | ND | 0.57 | |
| Benzo(a)anthracene | ND | 0.41 | |
| Chrysene | ND | 0.43 | |
| bis(2-Ethylhexyl)phthalate | 0.76 | 1.5 | J B1 |
| Di-n-octylphthalate | ND | 0.43 | |
| Benzo(b)fluoranthene | ND | 0.42 | |
| Benzo(k)fluoranthene | ND | 0.36 | |
| Benzo(a)pyrene | ND | 0.15 | |
| Indeno(1,2,3-cd)pyrene | ND | 0.15 | |
| Dibenz(a,h)anthracene | ND | 0.14 | |
| Benzo(g,h,i)perylene | ND | 0.2 | |

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SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120211 |
| Lab ID: | 45227-02 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/20/94 |
| Date Analyzed: | 12/22/94 |
| % Solids | - |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | 65 | | 35 | 114 |
| 2 - Fluorobiphenyl | 79 | | 43 | 116 |
| p - Terphenyl - d14 | 86 | | 33 | 141 |
| Phenol - d5 | 29 | | 10 | 94 |
| 2 - Fluorophenol | 58 | | 21 | 100 |
| 2,4,6 - Tribromophenol | 84 | | 10 | 123 |

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-----------|
| Phenol | ND | 0.2 | PND |
| bis(2-Chloroethyl)ether | ND | 0.26 | RND |
| 2-Chlorophenol | ND | 0.29 | |
| 1,3-Dichlorobenzene | ND | 0.38 | |
| 1,4-Dichlorobenzene | ND | 0.36 | |
| Benzyl Alcohol | ND | 1 | |
| 1,2-Dichlorobenzene | ND | 0.39 | |
| 2-Methylphenol | ND | 0.37 | |
| bis(2-Chloroisopropyl)ether | ND | 0.64 | |
| 4-Methylphenol | ND | 1 | |
| N-nitroso-di-n-propylamine | ND | 0.7 | |
| Hexachloroethane | ND | 0.7 | |
| Nitrobenzene | ND | 1.1 | |
| Isophorone | ND | 0.82 | |
| 2-Nitrophenol | ND | 0.37 | |
| 2,4-Dimethylphenol | ND | 0.28 | |
| Benzoic Acid | ND | 0.45 | |
| bis(2-Chloroethoxy)methane | ND | 0.38 | J |
| 2,4-Dichlorophenol | ND | 0.27 | |
| 1,2,4-Trichlorobenzene | ND | 0.35 | |
| Naphthalene | ND | 0.27 | |
| 4-Chloroaniline | ND | 0.32 | |
| Hexachlorobutadiene | ND | 0.28 | |
| 4-Chloro-3-methylphenol | ND | 0.26 | |
| 2-Methylnaphthalene | ND | 0.29 | |
| Hexachlorocyclopentadiene | ND | 0.46 | M 1/32-95 |

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Semivolatile Organics by USEPA Method 8270 data for 45227-02 continued...

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|-------|-------|
| 2,4,6-Trichlorophenol | ND | 0.29 | ✓ |
| 2,4,5-Trichlorophenol | ND | 0.31 | |
| 2-Chloronaphthalene | ND | 0.44 | |
| 2-Nitroaniline | ND | 0.44 | |
| Dimethylphthalate | ND | 0.41 | |
| Acenaphthylene | ND | 0.27 | |
| 2,6-Dinitrotoluene | 0.38 | 0.26 | |
| 3-Nitroaniline | ND | 0.23 | ✓ |
| Acenaphthene | ND | 0.38 | |
| 2,4-Dinitrophenol | ND | 0.28 | J |
| 4-Nitrophenol | ND | 0.093 | J |
| Dibenzofuran | ND | 0.36 | |
| 2,4-Dinitrotoluene | ND | 0.46 | |
| Diethylphthalate | ND | 0.37 | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | |
| Fluorene | ND | 0.54 | |
| 4-Nitroaniline | ND | 0.34 | |
| 4,6-Dinitro-2-methylphenol | ND | 0.22 | R |
| N-Nitrosodiphenylamine | ND | 0.4 | |
| 4-Bromophenyl phenyl ether | ND | 0.22 | |
| Hexachlorobenzene | ND | 0.26 | |
| Pentachlorophenol | ND | 0.36 | |
| Phenanthrene | ND | 0.42 | |
| Anthracene | ND | 0.35 | |
| Di-n-butylphthalate | 0.68 | 0.84 | J B1 |
| Fluoranthene | ND | 0.26 | |
| Pyrene | ND | 0.3 | |
| Butylbenzylphthalate | ND | 0.3 | |
| 3,3'-Dichlorobenzidine | ND | 0.41 | |
| Benzo(a)anthracene | ND | 0.29 | |
| Chrysene | ND | 0.3 | |
| bis(2-Ethylhexyl)phthalate | 0.76 | 1.1 | J B1 |
| Di-n-octylphthalate | ND | 0.3 | |
| Benzo(b)fluoranthene | ND | 0.3 | |
| Benzo(k)fluoranthene | ND | 0.25 | |
| Benzo(a)pyrene | ND | 0.11 | |
| Indeno(1,2,3-cd)pyrene | ND | 0.1 | |
| Dibenz(a,h)anthracene | ND | 0.1 | |
| Benzo(g,h,i)perylene | ND | 0.14 | |

MM 3-21-95

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120212 |
| Lab ID: | 45227-03 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/20/94 |
| Date Analyzed: | 12/22/94 |
| % Solids | - |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | 65 | | 35 | 114 |
| 2 - Fluorobiphenyl | 73 | | 43 | 116 |
| p - Terphenyl - d14 | 77 | | 33 | 141 |
| Phenol - d5 | 29 | | 10 | 94 |
| 2 - Fluorophenol | 56 | | 21 | 100 |
| 2,4,6 - Tribromophenol | 71 | | 10 | 123 |

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| Phenol | ND | 0.29 | ND |
| bis(2-Chloroethyl)ether | ND | 0.39 | ND |
| 2-Chlorophenol | ND | 0.42 | ND |
| 1,3-Dichlorobenzene | ND | 0.56 | ND |
| 1,4-Dichlorobenzene | ND | 0.54 | ND |
| Benzyl Alcohol | ND | 1.5 | ND |
| 1,2-Dichlorobenzene | ND | 0.57 | ND |
| 2-Methylphenol | ND | 0.54 | ND |
| bis(2-Chloroisopropyl)ether | ND | 0.95 | ND |
| 4-Methylphenol | ND | 1.5 | ND |
| N-nitroso-di-n-propylamine | ND | 1 | ND |
| Hexachloroethane | ND | 1 | ND |
| Nitrobenzene | ND | 1.6 | ND |
| Isophorone | ND | 1.2 | ND |
| 2-Nitrophenol | ND | 0.54 | ND |
| 2,4-Dimethylphenol | ND | 0.42 | ND |
| Benzoic Acid | ND | 0.66 | ND |
| bis(2-Chloroethoxy)methane | ND | 0.55 | ND |
| 2,4-Dichlorophenol | ND | 0.39 | ND |
| 1,2,4-Trichlorobenzene | ND | 0.52 | ND |
| Naphthalene | ND | 0.4 | ND |
| 4-Chloroaniline | ND | 0.47 | ND |
| Hexachlorobutadiene | ND | 0.42 | ND |
| 4-Chloro-3-methylphenol | ND | 0.39 | ND |
| 2-Methylnaphthalene | ND | 0.42 | ND |
| Hexachlorocyclopentadiene | ND | 0.68 | ND |

SOUND ANALYTICAL SERVICES, INC.

Semivolatile Organics by USEPA Method 8270 data for 45227-03 continued...

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| 2,4,6-Trichlorophenol | ND | 0.43 | RND |
| 2,4,5-Trichlorophenol | ND | 0.46 | |
| 2-Chloronaphthalene | ND | 0.65 | |
| 2-Nitroaniline | ND | 0.64 | |
| Dimethylphthalate | ND | 0.61 | |
| Acenaphthylene | ND | 0.39 | |
| 2,6-Dinitrotoluene | ND | 0.38 | |
| 3-Nitroaniline | ND | 0.33 | |
| Acenaphthene | ND | 0.55 | |
| 2,4-Dinitrophenol | ND | 0.41 | J |
| 4-Nitrophenol | ND | 0.14 | J |
| Dibenzofuran | ND | 0.53 | |
| 2,4-Dinitrotoluene | ND | 0.68 | |
| Diethylphthalate | ND | 0.54 | |
| 4-Chlorophenyl phenyl ether | ND | 0.48 | |
| Fluorene | ND | 0.8 | |
| 4-Nitroaniline | ND | 0.49 | |
| 4,6-Dinitro-2-methylphenol | ND | 0.32 | R |
| N-Nitrosodiphenylamine | ND | 0.59 | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | |
| Hexachlorobenzene | ND | 0.39 | |
| Pentachlorophenol | ND | 0.53 | |
| Phenanthrene | ND | 0.62 | |
| Anthracene | ND | 0.52 | |
| Di-n-butylphthalate | 0.88 | 1.2 | J B1 |
| Fluoranthene | ND | 0.38 | |
| Pyrene | ND | 0.44 | |
| Butylbenzylphthalate | ND | 0.44 | |
| 3,3'-Dichlorobenzidine | ND | 0.6 | |
| Benzo(a)anthracene | ND | 0.43 | |
| Chrysene | ND | 0.45 | |
| bis(2-Ethylhexyl)phthalate | 0.93 | 1.6 | J B1 |
| Di-n-octylphthalate | ND | 0.45 | |
| Benzo(b)fluoranthene | ND | 0.44 | |
| Benzo(k)fluoranthene | ND | 0.37 | |
| Benzo(a)pyrene | ND | 0.16 | |
| Indeno(1,2,3-cd)pyrene | ND | 0.15 | |
| Dibenz(a,h)anthracene | ND | 0.15 | |
| Benzo(g,h,i)perylene | ND | 0.21 | |

MW 32-05

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120221 |
| Lab ID: | 45227-04 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/20/94 |
| Date Analyzed: | 12/22/94 |
| % Solids | - |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | 62 | | 35 | 114 |
| 2 - Fluorobiphenyl | 72 | | 43 | 116 |
| p - Terphenyl - d14 | 80 | | 33 | 141 |
| Phenol - d5 | 29 | | 10 | 94 |
| 2 - Fluorophenol | 54 | | 21 | 100 |
| 2,4,6 - Tribromophenol | 77 | | 10 | 123 |

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| Phenol | ND | 0.1 | ND |
| bis(2-Chloroethyl)ether | ND | 0.4 | ND |
| 2-Chlorophenol | ND | 0.43 | |
| 1,3-Dichlorobenzene | ND | 0.58 | |
| 1,4-Dichlorobenzene | ND | 0.55 | |
| Benzyl Alcohol | ND | 1.6 | |
| 1,2-Dichlorobenzene | ND | 0.59 | |
| 2-Methylphenol | ND | 0.56 | |
| bis(2-Chloroisopropyl)ether | ND | 0.98 | |
| 4-Methylphenol | ND | 1.5 | |
| N-nitroso-di-n-propylamine | ND | 1.1 | |
| Hexachloroethane | ND | 1.1 | |
| Nitrobenzene | ND | 1.6 | |
| Isophorone | ND | 1.3 | |
| 2-Nitrophenol | ND | 0.56 | |
| 2,4-Dimethylphenol | ND | 0.43 | |
| Benzoic Acid | ND | 0.68 | |
| bis(2-Chloroethoxy)methane | ND | 0.57 | |
| 2,4-Dichlorophenol | ND | 0.41 | |
| 1,2,4-Trichlorobenzene | ND | 0.54 | |
| Naphthalene | ND | 0.41 | |
| 4-Chloroaniline | ND | 0.49 | |
| Hexachlorobutadiene | ND | 0.43 | |
| 4-Chloro-3-methylphenol | ND | 0.4 | |
| 2-Methylnaphthalene | ND | 0.43 | |
| Hexachlorocyclopentadiene | ND | 0.71 | |

SOUND ANALYTICAL SERVICES, INC.

Semivolatile Organics by USEPA Method 8270 data for 45227-04 continued...

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| 2,4,6-Trichlorophenol | ND | 0.44 | V |
| 2,4,5-Trichlorophenol | ND | 0.47 | |
| 2-Chloronaphthalene | ND | 0.67 | |
| 2-Nitroaniline | ND | 0.66 | |
| Dimethylphthalate | ND | 0.63 | |
| Acenaphthylene | ND | 0.41 | |
| 2,6-Dinitrotoluene | 0.33 | 0.4 | J |
| 3-Nitroaniline | ND | 0.34 | V |
| Acenaphthene | ND | 0.57 | |
| 2,4-Dinitrophenol | ND | 0.42 | J |
| 4-Nitrophenol | ND | 0.14 | J |
| Dibenzofuran | ND | 0.55 | |
| 2,4-Dinitrotoluene | ND | 0.71 | |
| Diethylphthalate | ND | 0.56 | |
| 4-Chlorophenyl phenyl ether | ND | 0.5 | |
| Fluorene | ND | 0.83 | |
| 4-Nitroaniline | ND | 0.51 | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | R |
| N-Nitrosodiphenylamine | ND | 0.61 | |
| 4-Bromophenyl phenyl ether | ND | 0.34 | |
| Hexachlorobenzene | ND | 0.4 | |
| Pentachlorophenol | ND | 0.54 | |
| Phenanthrene | ND | 0.64 | |
| Anthracene | ND | 0.53 | V |
| Di-n-butylphthalate | 0.73 | 1.3 | J B1 |
| Fluoranthene | ND | 0.4 | V |
| Pyrene | ND | 0.46 | |
| Butylbenzylphthalate | ND | 0.46 | |
| 3,3'-Dichlorobenzidine | ND | 0.62 | |
| Benzo(a)anthracene | ND | 0.44 | V |
| Chrysene | ND | 0.46 | |
| bis(2-Ethylhexyl)phthalate | 1.2 | 1.6 | J B1 |
| Di-n-octylphthalate | ND | 0.46 | V |
| Benzo(b)fluoranthene | ND | 0.45 | |
| Benzo(k)fluoranthene | ND | 0.39 | |
| Benzo(a)pyrene | ND | 0.16 | |
| Indeno(1,2,3-cd)pyrene | ND | 0.16 | |
| Dibenz(a,h)anthracene | ND | 0.15 | |
| Benzo(g,h,i)perylene | ND | 0.21 | |

MM 3-21-95

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120219 |
| Lab ID: | 45227-06 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/20/94 |
| Date Analyzed: | 12/22/94 |
| % Solids | |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | 70 | | 35 | 114 |
| 2 - Fluorobiphenyl | 80 | | 43 | 116 |
| p - Terphenyl - d14 | 101 | | 33 | 141 |
| Phenol - d5 | 27 | | 10 | 94 |
| 2 - Fluorophenol | 53 | | 21 | 100 |
| 2,4,6 - Tribromophenol | 100 | | 10 | 123 |

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|---------|
| Phenol | ND | 0.26 | ✓ RND |
| bis(2-Chloroethyl)ether | ND | 0.35 | ✓ RND |
| 2-Chlorophenol | ND | 0.38 | |
| 1,3-Dichlorobenzene | ND | 0.5 | |
| 1,4-Dichlorobenzene | ND | 0.49 | |
| Benzyl Alcohol | ND | 1.4 | |
| 1,2-Dichlorobenzene | ND | 0.52 | |
| 2-Methylphenol | ND | 0.49 | |
| bis(2-Chloroisopropyl)ether | ND | 0.86 | |
| 4-Methylphenol | ND | 1.3 | |
| N-nitroso-di-n-propylamine | ND | 0.93 | |
| Hexachloroethane | ND | 0.93 | |
| Nitrobenzene | ND | 1.4 | |
| Isophorone | ND | 1.1 | |
| 2-Nitrophenol | ND | 0.49 | |
| 2,4-Dimethylphenol | ND | 0.38 | |
| Benzoic Acid | ND | 0.6 | |
| bis(2-Chloroethoxy)methane | ND | 0.5 | |
| 2,4-Dichlorophenol | ND | 0.36 | J |
| 1,2,4-Trichlorobenzene | ND | 0.47 | |
| Naphthalene | ND | 0.36 | |
| 4-Chloroaniline | ND | 0.43 | |
| Hexachlorobutadiene | ND | 0.38 | |
| 4-Chloro-3-methylphenol | ND | 0.35 | |
| 2-Methylnaphthalene | ND | 0.38 | |
| Hexachlorocyclopentadiene | ND | 0.62 | MW 3245 |

SOUND ANALYTICAL SERVICES, INC.

Semivolatile Organics by USEPA Method 8270 data for 45227-06 continued...

| Analyte | Result (ug/L) | PQL | Flags |
|-----------------------------|------------------|------|-------|
| 2,4,6-Trichlorophenol | ND | 0.39 | ✓ PND |
| 2,4,5-Trichlorophenol | ND | 0.41 | ✓ PND |
| 2-Chloronaphthalene | ND | 0.59 | |
| 2-Nitroaniline | ND | 0.58 | |
| Dimethylphthalate | ND | 0.55 | |
| Acenaphthylene | ND | 0.36 | |
| 2,6-Dinitrotoluene | ND | 0.35 | |
| 3-Nitroaniline | ND | 0.3 | ✓ |
| Acenaphthene | 0.37 | 0.5 | J |
| 2,4-Dinitrophenol | ND | 0.37 | VS |
| 4-Nitrophenol | ND | 0.12 | ✓ S |
| Dibenzofuran | ND | 0.48 | |
| 2,4-Dinitrotoluene | ND | 0.62 | |
| Diethylphthalate | ND | 0.49 | |
| 4-Chlorophenyl phenyl ether | ND | 0.44 | |
| Fluorene | ND | 0.72 | |
| 4-Nitroaniline | ND | 0.45 | |
| 4,6-Dinitro-2-methylphenol | ND | 0.29 | ✓ R |
| N-Nitrosodiphenylamine | ND | 0.54 | |
| 4-Bromophenyl phenyl ether | ND | 0.3 | |
| Hexachlorobenzene | ND | 0.35 | |
| Pentachlorophenol | 0.58 | ✓ J | |
| Phenanthrene | ND | 0.56 | ✓ U |
| Anthracene | ND | 0.47 | ✓ V |
| Di-n-butylphthalate | 56 | 1.1 | B2 |
| Fluoranthene | ND | 0.35 | ✓ U |
| Pyrene | ND | 0.4 | ✓ V |
| Butylbenzylphthalate | 0.29 | 0.4 | J |
| 3,3'-Dichlorobenzidine | ND | 0.54 | ✓ U |
| Benzo(a)anthracene | ND | 0.39 | |
| Chrysene | ND | 0.4 | |
| bis(2-Ethylhexyl)phthalate | 1.7 | 1.4 | B1 |
| Di-n-octylphthalate | ND | 0.4 | ✓ V |
| Benzo(b)fluoranthene | ND | 0.4 | |
| Benzo(k)fluoranthene | ND | 0.34 | |
| Benzo(a)pyrene | ND | 0.14 | |
| Indeno(1,2,3-cd)pyrene | ND | 0.14 | |
| Dibenz(a,h)anthracene | ND | 0.13 | ✓ V |
| Benzo(g,h,i)perylene | ND | 0.19 | ✓ V |

M N
3/24/05

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120201 |
| Lab ID: | 45227-07 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/28/95 |
| Date Analyzed: | 12/28/95 |
| % Solids | 68.05 |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | 73 | | 23 | 120 |
| 2 - Fluorobiphenyl | 102 | | 30 | 115 |
| p - Terphenyl - d14 | 95 | | 18 | 137 |
| Phenol - d5 | 88 | | 24 | 113 |
| 2 - Fluorophenol | 103 | | 25 | 121 |
| 2,4,6 - Tribromophenol | 95 | | 19 | 122 |

Sample results are on a dry weight basis.

| Analyte | Result (ug/kg) | PQL | Flags |
|-----------------------------|-------------------|-----|-------|
| Phenol | ND | 53 | U5 |
| bis(2-Chloroethyl)ether | ND | 72 | PND |
| 2-Chlorophenol | ND | 78 | RD |
| 1,3-Dichlorobenzene | ND | 100 | |
| 1,4-Dichlorobenzene | ND | 99 | |
| Benzyl Alcohol | ND | 280 | |
| 1,2-Dichlorobenzene | ND | 110 | |
| 2-Methylphenol | ND | 100 | |
| bis(2-Chloroisopropyl)ether | ND | 170 | |
| 4-Methylphenol | ND | 270 | |
| N-nitroso-di-n-propylamine | ND | 190 | |
| Hexachloroethane | ND | 190 | |
| Nitrobenzene | ND | 290 | |
| Isophorone | ND | 220 | |
| 2-Nitrophenol | ND | 100 | |
| 2,4-Dimethylphenol | ND | 77 | |
| Benzoic Acid | ND | 120 | |
| bis(2-Chloroethoxy)methane | ND | 100 | |
| 2,4-Dichlorophenol | ND | 73 | |
| 1,2,4-Trichlorobenzene | ND | 96 | |
| Naphthalene | ND | 74 | |
| 4-Chloroaniline | ND | 87 | |
| Hexachlorobutadiene | ND | 77 | |
| 4-Chloro-3-methylphenol | ND | 72 | |
| 2-Methylnaphthalene | ND | 78 | |
| Hexachlorocyclopentadiene | ND | 130 | |

SOUND ANALYTICAL SERVICES, INC.

Semivolatile Organics by USEPA Method 8270 data for 45227-07 continued...

| Analyte | Result (ug/kg) | PQL | Flags |
|-----------------------------|-------------------|-----|-------|
| 2,4,6-Trichlorophenol | ND | 79 | UJ |
| 2,4,5-Trichlorophenol | ND | 85 | PND |
| 2-Chloronaphthalene | ND | 120 | RND |
| 2-Nitroaniline | ND | 120 | |
| Dimethylphthalate | ND | 110 | |
| Acenaphthylene | ND | 73 | |
| 2,6-Dinitrotoluene | ND | 71 | |
| 3-Nitroaniline | ND | 61 | |
| Acenaphthene | ND | 100 | |
| 2,4-Dinitrophenol | ND | 75 | |
| 4-Nitrophenol | ND | 25 | |
| Dibenzofuran | ND | 98 | |
| 2,4-Dinitrotoluene | ND | 130 | |
| Diethylphthalate | ND | 100 | |
| 4-Chlorophenyl phenyl ether | ND | 89 | |
| Fluorene | ND | 150 | |
| 4-Nitroaniline | ND | 91 | |
| 4,6-Dinitro-2-methylphenol | ND | 59 | |
| N-Nitrosodiphenylamine | ND | 110 | J |
| 4-Bromophenyl phenyl ether | ND | 60 | |
| Hexachlorobenzene | ND | 72 | |
| Pentachlorophenol | ND | 97 | |
| Phenanthrene | ND | 110 | |
| Anthracene | ND | 95 | |
| Di-n-butylphthalate | ND | 230 | |
| Fluoranthene | ND | 71 | |
| Pyrene | ND | 82 | |
| Butylbenzylphthalate | ND | 82 | |
| 3,3'-Dichlorobenzidine | ND | 110 | |
| Benzo(a)anthracene | ND | 79 | |
| Chrysene | ND | 83 | |
| bis(2-Ethylhexyl)phthalate | 6500 | 290 | |
| Di-n-octylphthalate | ND | 83 | U |
| Benzo(b)fluoranthene | ND | 81 | |
| Benzo(k)fluoranthene | ND | 69 | |
| Benzo(a)pyrene | ND | 29 | |
| Indeno(1,2,3-cd)pyrene | ND | 28 | |
| Dibenz(a,h)anthracene | ND | 27 | |
| Benzo(g,h,i)perylene | ND | 38 | |

MW3245

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120201 |
| Lab ID: | 45227-7C |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/28/94 |
| Date Analyzed: | 1/12/95 |
| % Solids | 68.05 |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Phenol - d5 | 29 | | 24 | 113 |
| 2 - Fluorophenol | 44 | | 25 | 121 |
| 2,4,6 - Tribromophenol | 89 | | 19 | 122 |

Sample results are on a dry weight basis.

| | | | |
|-------------------|-------------------|-----|-----------|
| Analyte | Result (ug/kg) | PQL | Flags |
| Pentachlorophenol | 83 J | 97 | PND J RND |



SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120207 |
| Lab ID: | 45227-08 |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/28/95 |
| Date Analyzed: | 12/28/95 |
| % Solids | 63.32 |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Nitrobenzene - d5 | - | X8 | 23 | 120 |
| 2 - Fluorobiphenyl | - | X8 | 30 | 115 |
| p - Terphenyl - d14 | - | X8 | 18 | 137 |
| Phenol - d5 | - | X8 | 24 | 113 |
| 2 - Fluorophenol | - | X8 | 25 | 121 |
| 2,4,6 - Tribromophenol | - | X8 | 19 | 122 |

Sample results are on a dry weight basis.

| Analyte | Result (ug/kg) | PQL | Flags |
|-----------------------------|-------------------|-------|---------|
| Phenol | ND | 5700 | UJ |
| bis(2-Chloroethyl)ether | ND | 7700 | PND RND |
| 2-Chlorophenol | ND | 8300 | |
| 1,3-Dichlorobenzene | ND | 11000 | |
| 1,4-Dichlorobenzene | ND | 11000 | |
| Benzyl Alcohol | ND | 30000 | |
| 1,2-Dichlorobenzene | ND | 11000 | |
| 2-Methylphenol | ND | 11000 | |
| bis(2-Chloroisopropyl)ether | ND | 19000 | |
| 4-Methylphenol | ND | 29000 | |
| N-nitroso-di-n-propylamine | ND | 20000 | |
| Hexachloroethane | ND | 20000 | |
| Nitrobenzene | ND | 31000 | |
| Isophorone | ND | 24000 | |
| 2-Nitrophenol | ND | 11000 | |
| 2,4-Dimethylphenol | ND | 8200 | |
| Benzoic Acid | ND | 13000 | |
| bis(2-Chloroethoxy)methane | ND | 11000 | |
| 2,4-Dichlorophenol | ND | 7800 | |
| 1,2,4-Trichlorobenzene | ND | 10000 | |
| Naphthalene | ND | 7900 | |
| 4-Chloroaniline | ND | 9400 | |
| Hexachlorobutadiene | ND | 8200 | |
| 4-Chloro-3-methylphenol | ND | 7700 | |
| 2-Methylnaphthalene | ND | 8300 | |
| Hexachlorocyclopentadiene | ND | 14000 | |

SOUND ANALYTICAL SERVICES, INC.

Semivolatile Organics by USEPA Method 8270 data for 45227-08 continued...

| Analyte | Result (ug/kg) | PQL | Flags |
|-----------------------------|-------------------|-------|-------|
| 2,4,6-Trichlorophenol | ND | 8500 | UJ |
| 2,4,5-Trichlorophenol | ND | 9100 | |
| 2-Chloronaphthalene | ND | 13000 | |
| 2-Nitroaniline | ND | 13000 | |
| Dimethylphthalate | ND | 12000 | |
| Acenaphthylene | ND | 7800 | |
| 2,6-Dinitrotoluene | ND | 7600 | |
| 3-Nitroaniline | ND | 6600 | |
| Acenaphthene | ND | 11000 | |
| 2,4-Dinitrophenol | ND | 8000 | |
| 4-Nitrophenol | ND | 2700 | |
| Dibenzofuran | ND | 11000 | |
| 2,4-Dinitrotoluene | ND | 14000 | |
| Diethylphthalate | ND | 11000 | |
| 4-Chlorophenyl phenyl ether | ND | 9600 | |
| Fluorene | ND | 16000 | |
| 4-Nitroaniline | ND | 9800 | |
| 4,6-Dinitro-2-methylphenol | ND -- | 6400 | |
| N-Nitrosodiphenylamine | ND | 12000 | |
| 4-Bromophenyl phenyl ether | ND | 6500 | |
| Hexachlorobenzene | ND | 7700 | |
| Pentachlorophenol | ND | 10000 | |
| Phenanthrene | ND | 12000 | |
| Anthracene | ND | 10000 | |
| Di-n-butylphthalate | ND | 24000 | |
| Fluoranthene | ND | 7600 | |
| Pyrene | ND | 8800 | |
| Butylbenzylphthalate | ND | 8800 | |
| 3,3'-Dichlorobenzidine | ND | 12000 | |
| Benzo(a)anthracene | ND | 8500 | |
| Chrysene | ND | 8900 | |
| bis(2-Ethylhexyl)phthalate | ND | 31000 | |
| Di-n-octylphthalate | ND | 8900 | |
| Benzo(b)fluoranthene | ND | 8700 | |
| Benzo(k)fluoranthene | ND | 7400 | |
| Benzo(a)pyrene | ND | 3100 | |
| Indeno(1,2,3-cd)pyrene | ND | 3000 | |
| Dibenz(a,h)anthracene | ND | 2900 | |
| Benzo(g,h,i)perylene | ND | 4100 | |

MW 28-95

SOUND ANALYTICAL SERVICES, INC.

| | |
|----------------|-----------------------|
| Client Name | Ecology & Environment |
| Client ID: | T4120207 |
| Lab ID: | 45227-8C |
| Date Received: | 12/16/94 |
| Date Prepared: | 12/28/94 |
| Date Analyzed: | 1/12/95 |
| % Solids | 63.32 |

Semivolatile Organics by USEPA Method 8270

| Surrogate | % Recovery | Flags | Recovery Limits | |
|------------------------|------------|-------|-----------------|------|
| | | | Low | High |
| Phenol - d5 | 38 | | 24 | 113 |
| 2 - Fluorophenol | 64 | | 25 | 121 |
| 2,4,6 - Tribromophenol | 93 | | 19 | 122 |

Sample results are on a dry weight basis.

| Analyte | Result (ug/kg) | PQL | Flags |
|-------------------|-------------------|-----|-----------|
| Pentachlorophenol | 66 J | 100 | PND J RND |